REMARKS

Claims 1-14 are all the claims pending in the application.

Applicants request that the Official Draftsperson review the drawings and that a completed Form PTO-948 be included in the next Office Action.

Claims 1-14 are pending in the application. Applicants add new claims 15 and 16. Claims 2-14 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Claims 1 and 2 are rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by Hill (U.S. Patent No. 5,713,016) ("Hill"). Applicants add new claims 15 and 16 to more particularly claim the invention and to submit the following arguments to traverse the prior art rejections.

Applicants' invention relates to a method for indexing feature vectors within feature vector data space which includes adaptively forming approximation of the feature vectors on the basis of the statistical distribution of feature vector data within the feature vector data space, in an embodiment.

Claims 2-14 are rejected under § 112, first paragraph. Applicants submit that the disclosure complies with the enablement requirement because the claims contain subject matter described in the specification in such a way as to enable on skilled in the art to make and/or use the invention. The Examiner states that "it is the intention of the Invention to transform a statistical distribution into multidimensional statistical distribution (joint density function) from which the joint density functions related to the dimensionality can be identified. Integrating across the space of the joint density function, one can arrive at the marginal density function and hence one begins to develop the grid. This process is not straightforward and would require

extensive experimentation to replicate the invention. A grid is two-dimensional and yet the process is n dimensional."

To the contrary, Applicants submit that the specification discloses indexing feature vector *data space* with *high dimensionality* by measuring the statistical distribution of feature vector *data*. (page 7, lines 10-11). Specifically, in an embodiment, the statistical distribution of high dimensional data is realized through the use of a probability distribution function denoted by $p_i(x)$ for data in *one dimension*, dimension *i*. (page 8, lines 14-15), "[f]ollowing the assumption that *data on each dimension* are independent of each other, the algorithm described hereinafter can be applied to each dimension independently." (page 8, lines 16-18). The grids mentioned on page 7 are formed from the marginal density function which is, in turn, measured from the statistical distribution of the one dimensional feature vector data, not the multi-dimensional feature vector data space (page 7, lines 9-16).

As for the drawing labeled 20 as shown in FIG. 2, Applicants submit that the reference number 20 refers to an exemplary representation of the entire feature vector space in 2 dimensions.

In response to the Examiner's statement that "Fig. 2 does not convey much information and [with] certain[ty] since the marginal distribution comes about from the integration of the joint density function, *the question of how uniformity is achieved is not sufficiently conveyed from the specification,*" Applicants submit the following as an explanation:

If the estimated marginal distribution is f(x), where $0<x<A$, and N is the number of grids (predetermined), then one can find x_i, such as $0=x_0 < x_1 < x_2 < x_3 \ldots < x_{N-1} < x_N$ with the property such that the integral of f(x) from x_i to $x_{(i+1)}$ = (integral of f(x) from 0 to A)/N for all I

(I=0, 1, . . . , N). In other words, estimated marginal distributions are divided into a plurality of grids, where, the probabilities of the data being disposed in each grid are substantially the same. Uniformity means that the number of data in each grid are almost same for all grids.

Claims 1-2 are rejected under § 102(a) over Hill. Hill relates to a process for determining relevance between two documents. The process includes providing a first feature vector, a second feature vector, and an indexing parameter.

Claim 1 is patentable because Hill fails to teach the step of adaptively approximating feature vectors on the basis of statistical distribution of feature vector data in the feature vector data space. Although Hill discloses the identification and creation of a feature vector representing a first document, as cited by the Examiner, Hill fails to disclose that the feature vector is adaptively approximated on the basis of statistical distribution of feature vector data in the feature vector data space. To the contrary, Hill discloses that the prior distribution for the indexing parameter (λ) represents the distribution of (λ), not of the feature vector data, across the entire database of documents (col. 3, lines 55-59). The Examiner notes that adaptively is synonymous with "fit" but Applicants request the Examiner to point out where "fit" is disclosed in the reference in the manner claimed.

Claims 2-14, which depend from claim 1, are patentable for the reasons presented for claim 1.

In addition, Applicants submit that claim 2 is patentable because Hill fails to teach each and every element of the claim. As explained above, Hill fails to teach the measuring of the statistical distribution of the feature vector data in the feature vector data space.

In addition, Hill fails to teach the step of estimating marginal distribution of the feature vector data using the statistical distribution. In the passage cited by the Examiner as teaching the claimed step of estimating, Hill teaches the marginal distribution of z_j; however, z_j is not the feature vector data, but a set of training vectors used to generate an estimate of $p(\lambda)$ (col. 4, lines 44-46) which is merely the distribution of the indexing parameter (col. 3, line 64). The relationship of the cited elements differs from that of claim 2.

Furthermore, Hill fails to teach the claimed step of dividing the estimated marginal distribution into a plurality of grids in which a probability of disposing the feature vector data in each grid is uniform. In Hill, there is no mention of any grid, and the figures referenced by the Examiner only "illustrate tables showing examples of generating relevance between a 'query' patent and the two other 'document' patents." (col. 8, lines 51-54). The Examiner has not presented any evidence which makes clear that the step of dividing the estimated marginal distribution into a plurality of grids based on marginal distribution and probability of disposing a feature vector data in each grid is uniform is necessarily present in the reference, and that it would be so recognized by persons of ordinary skill. M.P.E.P. §2131.01 §§ III. It would appear that such imposed uniformity in Hill would render it impossible to distinguish the applicability and relevance of patent documents to certain criteria, thereby rending Hill inoperable for its intended purpose.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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